

AD-A211 018

2

## CONFICTING CONCEPTS COMMAND, AND CONTROL

A Monograph

by

Major Joseph E. Noble  
United States Marine Corps

DTIC  
ELECTE  
AUG 09 1989  
S D & D



School of Advanced Military Studies  
United States Army Command and General Staff College  
Fort Leavenworth, Kansas

First Term AY 88-89

Approved for Public Release; Distribution is Unlimited

89-03131

89

8

00

0

2

UNCLASSIFIED  
SECURITY CLASSIFICATION OF THIS PAGE

## REPORT DOCUMENTATION PAGE

Form Approved  
OMB No. 0704-0188

a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED		1b. RESTRICTIVE MARKINGS Approved for public release; distribution unlimited.	
a. SECURITY CLASSIFICATION AUTHORITY		3. DISTRIBUTION/AVAILABILITY OF REPORT	
b. DECLASSIFICATION/DOWNGRADING SCHEDULE		Approved for public release; distribution unlimited.	
4. PERFORMING ORGANIZATION REPORT NUMBER(S)		5. MONITORING ORGANIZATION REPORT NUMBER(S)	
6a. NAME OF PERFORMING ORGANIZATION School of Advanced Military Studies, USAC&GSC		6b. OFFICE SYMBOL (If applicable) AZTL-SWV	
7a. NAME OF MONITORING ORGANIZATION		7b. ADDRESS (City, State, and ZIP Code)	
8a. NAME OF FUNDING/SPONSORING ORGANIZATION		8b. OFFICE SYMBOL (If applicable)	
8c. ADDRESS (City, State, and ZIP Code)		9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
		10. SOURCE OF FUNDING NUMBERS	
		PROGRAM ELEMENT NO.	PROJECT NO.
		TASK NO.	WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification)			
Conflicting Concepts -- Command, and Control (U)			
12. PERSONAL AUTHOR(S) Major Joseph E. Noble, USMC			
13a. TYPE OF REPORT Monograph	13b. TIME COVERED FROM _____ TO _____	14. DATE OF REPORT (Year, Month, Day) 88/12/15	15. PAGE COUNT 37
16. SUPPLEMENTARY NOTATION			
17. COSATI CODES		18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB-GROUP	Command and control Command Control
			Command and control systems
19. ABSTRACT (Continue on reverse if necessary and identify by block number)			
<p>- Is "command and control" a single concept, or two separate concepts -- command, and control -- which have inherent conflicts on the tactical battlefield? The concepts of command and control will be examined by using doctrinal definitions and conceptual discussions from several sources. The concepts of "synchronization" and "integration" will be examined for their specific impact on the concept of control. Using any differences identified in the conceptual development as a criteria, conclusions will be drawn as to the type of systems required to support the concepts of command and control.</p> <p>Command and control should be viewed as not a single concept, but two interrelated concepts. Command as a concept consists of the functions of planning, organizing, coordinating, directing, and (continued on back)</p>			
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS		21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED	
22a. NAME OF RESPONSIBLE INDIVIDUAL Major Joseph E. Noble		22b. TELEPHONE (Include Area Code) 913-727-5636	22c. OFFICE SYMBOL AZTL-SWV

Item 19 continued

controlling military activities toward mission accomplishment. Control, one of the functions of command, is involved with supervising and directing activities of the force to accomplish the intent of the commander. Since control is part of command, the term "command and control" tends to be misunderstood and misleading, making a clear understanding of the concept of command and the concept of control much more difficult to grasp.

Commanders, doctrine writers, and concept developers need to have a clearer understanding of these concepts. The distinctions between, and the inherent conflict resident in, the concepts of command, and control, must be expanded in doctrine, understood by commanders, and accounted for by concept developers looking at future requirements and capabilities.

**Conflicting Concepts -- Command, and Control**

**Major Joseph E. Noble**  
**U.S. Marine Corps**

School of Advanced Military Studies  
U.S. Army Command and General Staff College  
Fort Leavenworth, Kansas

<b>Accession For</b>	
NTIS	CRA&I
DTIC	TAB
Unannounced	
Justification _____	
By _____	
Distribution _____	
<b>Availability Codes</b>	
Dist	Avail and/or Special
A-1	

15 December 1988

Approved for public release; distribution is unlimited.

School of Advanced Military Studies  
Monograph Approval

Name of Student:  
Title of Monograph

Major Joseph Noble, USMC  
Conflicting Concepts -- Command, and  
Control

Approved by:

Colonel Ronald E. Curry, M.S.

### Monograph Director

Colonel L. P. Holder, MA

Director, School of  
Advanced Military  
Studies

Philip J. Brookes, Ph.D.

Philip J. Brookes, Ph.D.

Director, Graduate  
Degree Programs

Accepted this 16th day of December 1988.

## ABSTRACT

CONFLICTING CONCEPTS -- COMMAND AND CONTROL, by Major Joseph Noble, U.S. Marine Corps. 33 pages.

Is "command and control" a single concept, or two separate concepts -- command, and control -- which have inherent conflicts on the tactical battlefield? The concepts of command and control will be examined by using doctrinal definitions and conceptual discussions from several sources. The concepts of "synchronization" and "integration" will be examined for their specific impact on the concept of control. Using any differences identified in the conceptual development as a criteria, conclusions will be drawn as to the type of systems required to support the concepts of command and control.

Command and control should be viewed as not a single concept, but two interrelated concepts. Command as a concept consists of the functions of planning, organizing, coordinating, directing, and controlling military activities toward mission accomplishment. Control, one of the functions of command, is involved with supervising and directing activities of the force to accomplish the intent of the commander. Since control is part of command, the term "command and control" tends to be misunderstood and misleading, making a clear understanding of the concept of command and the concept of control much more difficult to grasp.

Commanders, doctrine writers, and concept developers need to have a clearer understanding of these concepts. The distinctions between, and the inherent conflict resident in, the concepts of command, and control, must be expanded on in doctrine, understood by commanders, and accounted for by concept developers looking at future requirements and capabilities.

Table of Contents

	<b>Page</b>
I. Introduction . . . . .	1
II. Definitions and Conceptual Development . . .	3
III. Conceptual Differences . . . . .	13
IV. Conclusion . . . . .	22
V. Endnotes . . . . .	31
VI. Bibliography . . . . .	32

## Conflicting Concepts -- Command, and Control

### I. Introduction

Is "command and control" a single concept, or two separate concepts -- command, and control -- which have inherent conflicts on the tactical battlefield? The answer to this question has a dramatic impact both on how commanders view the modern battlefield and how each service provides equipment and systems to support its commanders. This monograph will examine the concepts of command and control, and the impact of our understanding of these concepts on how we envision systems to support the concepts.

The concepts of command and control will be examined by using doctrinal definitions and conceptual discussions from several sources. Joint Chiefs of Staff, U.S. Army, and U.S. Marine Corps doctrinal publications will be used to establish the accepted definitions of command and control. With these definitions in mind, the basic principles of command and control will be examined in order to establish their conceptual relationship to each other. From this basis, the concepts of command and control will be scrutinized to identify potential or existing conflicts.

Additionally, the concepts of "synchronization" and "integration" will be examined for their specific impact on the concept of control. The philosophy by which a service

decides to control its forces -- whether "synchronized", or "integrated" -- largely determines the basic equipment and systems required to provide the control desired. The differences between the concepts of "synchronization" and "integration" will be established in order to identify the impact of each concept on the design and requirements of supporting systems. The systems referred to include the people, equipment, facilities, communications, and procedures which provide a specific capability to the commander.

Using any differences identified in the conceptual development as a criteria, conclusions will be drawn as to the type of systems required to support the concepts of command and control. If command and control are separate concepts, what are the differences between the requirements for the command system versus the requirements of the control system? Depending on whether the force is to be a synchronized force or an integrated force, what are the specific implications on the design and requirements of the control system?

There is, in the opinion of the author, a significant difference in the concepts of synchronization and integration. The two concepts are not necessarily mutually exclusive, but are too often used interchangably. A service basing its doctrine primarily on one concept or the other will require forces designed to support that concept. What would such a force look like? Answers should be provided by a closer look at the concepts of command and control.

## II. Definitions and Conceptual Development

To address the concepts of command and control, a common framework of definitions is required. Several sources of definitions are available. Dictionaries, various manuals, and many research papers all contain definitions of command and control. To establish the most commonly accepted definitions of command and control, the Joint Chiefs of Staff (JCS) definitions will be used, since each service component has agreed to these definitions.

First, the Joint definition of command will be examined. According to the JCS, command is defined as:

"The authority that a commander in the military Service lawfully executes over subordinates by virtue of rank or assignment. Command includes the authority and responsibility for effectively using available resources and for planning for the employment of, organizing, directing, coordinating, and controlling (emphasis added) military forces for the accomplishment of assigned mission."<sup>1</sup>

It is worth noting at this point that control is one of the functions which fall under the umbrella of command.

The Joint definition of control according to JCS is:

Authority which may be less than full command exercised by a commander over part of the activities of subordinate or other organizations."<sup>2</sup>(emphasis added)

Key to later conceptual development is the point that control is a function of the commander over part of the activities of his organization which may be less than full command.

A Joint definition also exists for command and control:

"The exercise of authority and direction by a designated commander over his assigned forces in the accomplishment of the mission."3(emphasis added)

Command and control is seen here as an action performed by the commander over his forces, specifically the exercise of authority and direction.

From the Joint definitions, control can be viewed as a function of command, but is actually a separate concept. Both the definition of command and the definition of control are based on the authority of a commander. Command by definition is the authority of the commander over all of the activities of a unit, and includes the authority to control the unit. Control is defined as authority over part of the activities of the unit which may be less than full command. Both are a function of the commander's authority, but control is only one of the components of authority the commander has under his responsibilities of command. This distinction will be further developed later.

While addressing definitions, the definitions of two terms relating directly to concepts of control -- synchronization and integration -- need examination. The philosophy by which a commander plans for and organizes his control structure or system to direct the activities of his forces is an essential part of any command and control discussion. The differences in how forces must be controlled based on the

commander's view on whether they must be synchronized, or integrated, are significant. To understand the significance, definitions of synchronization and integration are needed.

Neither synchronization or integration have a definition to which all services agree. In fact, although both terms can be found in the doctrinal manuals of most services, only synchronization has a definition specifically given in a doctrinal manual. The U.S. Army defines synchronization as follows:

"Synchronization is the arrangement of battlefield activities in time, space, and purpose to produce maximum relative combat power at the decisive point. Synchronization is both a process and a result. Commanders synchronize activities; they thereby produce synchronized operations."<sup>4</sup>

Integration has no clear military definition. The doctrine of most services discuss integrated operations, or integrated supporting arms, or the need to integrate air and ground operations. What is meant by integration? The definition of integration from Webster's dictionary is:

"1. To make whole or complete. 2. To bring (parts) together into a whole; unify. 3. To indicate the sum or total of."<sup>5</sup>

A premise on the military use of the term integration would be the bringing together of various military activities into a cohesive whole to accomplish successful military operations. A proposed military definition of integration which can be compared to synchronization will be presented as:

Integration is the unifying of various military activities or capabilities into a cohesive whole to bring maximum combat power to bear at the decisive point

and time. Integration is both a process and result. Commanders integrate military activities or capabilities; they thereby produce integrated operations.

With the definitions of command, control, command and control, synchronization, and integration established, the concepts behind the definitions can be further examined.

To further examine and develop the concepts of command and control, a survey of sources addressing command and control issues was conducted to develop a clearer understanding of how both doctrinal sources and non-military writers viewed the concepts of command and control. The results of the source survey provides a base from which we can expand on the concepts of command and control.

The examination of U.S. Army doctrine concerning command and control provided clarification of the Army's view of the concepts. The Army manual on corps and division command and control states the following on the nature of command and control:

"Command and control synchronizes and coordinates combat power on the battlefield and provides the direction to fight. The command and control system provides the framework through which the commander communicates his intent to subordinates and supervises execution. Without effective command and control the unit will fail to perform its mission.

Command and control are two different processes, not one.

\* Command is the process by which the will and intent of the commander is infused among subordinates. This process is directive; its premise is reliable subordinate behavior.

\* Control is the process by which subordinate behavior inconsistent with the will and intent of the commander is identified and corrected. This process is regulatory; its premise is unreliable subordinate behavior."6

In Command in War, Martin van Creveld defines command as:

"...a function that has to be exercised, more or less continuously, if the army is to exist and to operate."<sup>7</sup>

He goes on to say :

" I am dealing here with command as a process that makes use of information in order to coordinate people and things toward the accomplishment of their missions."<sup>8</sup>

Van Creveld discusses at length the evolution and requirements of command systems, and concludes that the system needed to support the commander in the performance of his command functions should have the following characteristics:

- \* Decision thresholds as far down the organization's hierarchy as possible.
- \* Self-contained units at a fairly low level.
- \* A regular reporting and information - transmission system working both from the top down and from the bottom up.
- \* Headquarters which actively search for information.
- \* An informal, as well as a formal, communications network inside the organization.

His discussions on command and command systems' characteristics expand the concept of command to include the continuous nature of the command process, and the need for an information exchange system specifically designed to support the commander in his functions. Both of these facts will be returned to later.

In Taking Command, Colonel Samuel H. Hays and Lieutenant Colonel William N. Thomas provide additional insight into the relationship of command and control. Looking at the various responsibilities of the commander, and the relationship of each to the other, the authors state:

"...functions of directing and controlling logically follow in sequence the functions of planning, organizing, and co-ordinating. A plan is the end result of the planning process. A plan is essentially a guide to action, however. It is only upon implementation of the plan that the functions of directing and controlling become significant. In brief, directing is the leader telling his subordinates what he wants done. Controlling is the means he uses to determine if his directives are being carried out."9

This source establishes that the various functions of command have a sequential nature, and establishes the place of control in the sequence. Additionally, it presents the premise that control is the means by which the commander ensures that his plan is being executed.

The concept of control is further discussed in Taking Command. Three basic steps of controlling are presented: establishing standards, comparing standards and results, and taking corrective action.

"...the leader personally observes the execution of the plan or receives reports on its progress. Observations and reports are compared with the standards previously set in order to determine the degree to which actual performance coincides with the plan. Where the performance and plan do not coincide, the leader must determine the net effect on the mission. Here, corrective action may be required.

In this step, the exception principle is especially applicable. The commander's span of attention is conserved by the staff. The commander is told that all is going according to plan with the exception of significant items that are not.

...the commander must concentrate on critical control points. It is impossible for him to check the performance of activities under his control against all possible standards. The time and effort to do so would be staggering. This is especially true in higher levels of command."10

This expansion on the concept of control is crucial. The principle of "control by exception" is presented here, as well as the concept of span of attention, more commonly referred to as span of control. The commander should provide control of his forces through a designed system of exceptions. If things are going according to his plan, no external control is required. Control is applied only to those areas which deviate from the plan. Additionally, the amount of things which the commander himself can directly control is limited, and these limitations increase as you go to higher levels of command. A firm understanding of the limits of a commander's span of control will directly influence the type of control system he will establish to perform this critical function for him.

In his article "Command and Control and Decision Making", Frank M. Snyder provides an addition to our development of command and control concepts when he states:

"For the purposes of this article at least, the term "command" will be used to mean the function to be performed, the term "C3" will stand for the supporting system, while the term "command and control" will denote the process that commanders follow (in planning, directing, coordinating, and controlling) as they utilize C3 systems in order to discharge the function of command."<sup>11</sup>

The distinctions made by Snyder between command as a function and command and control as a process helps identify a framework for differences between the two concepts to be further expanded in Part III. of this monograph.

U.S. Marine Corps doctrine provides additional insight into the concept of integration. Marine doctrine states:

"Weapons and units are more effective when they operate in proper combination than when they function separately. The strengths of one system must be used to compensate for the limitations of others."12

Marine doctrine also states:

"Fire support must be integrated with direct fire and maneuver to maximize combat power."13

The need to bring disparate capabilities together into a unified whole having a greater capability than the sum of its separate parts is at the heart of the Marine belief in a force where ground forces, air forces, and combat service support forces are integrated into a cohesive whole.

The concept of integration also applies to the joining of direct fire, indirect fire, air, and maneuver into a cohesive whole of maximized firepower. This concept of integration will be compared to the concept of synchronization in Part III.

An examination of how the Soviets view command and control might reveal some additional insights into command and control concepts. In Fundamentals of Tactical Command and Control -- A Soviet View, D.A. Ivanov states that the Soviets think command and control consists of the following functions:

- \* The acquisition and processing of information on the situation.
- \* The commander's adoption of the decision and his planning for combat operations.

- \* Dissemination of the tactical missions to the troops and to organize their coordination.
- \* The organization of comprehensive support of combat actions.
- \* The organization and carrying out of political work.
- \* Preparing troops for combat operations.
- \* The organization of command and control itself.
- \* Command and control during combat operations.<sup>14</sup>

These eight functions are very similar to the functions of command identified in U.S. doctrine -- planning, organizing, coordinating, directing, and controlling. Yet the resulting methods of command and control used by the two countries could not be more different. Why that is will be discussed later.

A conceptual framework established by the sources surveyed can now be set. Command, that authority vested in the commander over all of his unit's activities, consists of five sequentially performed functions -- planning, organizing, coordinating, directing, and controlling (refer to Taking Command quotes cited). As events unfold, the functions, though of a sequential nature, are being performed continuously. The commander needs some type of information exchange system, a command system, to assist him in accomplishing these functions. The commander must establish a method of identifying deviations from his plan, of analyzing the impact, and of taking corrective action. This method is referred to as the control system. The span of control of the commander, his ability to personally control all of the activities of his unit, is limited, and the limitation increases

as the size of the unit increases. Control by exception, that is, control of only those activities which deviate from the plan, is a control concept based on a recognition of the limits of the commander's span of control.

Another way of looking at command and control would be to consider command as a function, and control as a process by which the commander's plan is supervised and implemented. The U.S. Army views the control process as one which synchronizes forces to achieve maximum combat power, while the U.S. Marine Corps views the control process as one which integrates various capabilities into a cohesive whole to maximize combat power at the decisive place and time. The Soviets view command and control as a process consisting of eight functions. The Soviet functions are similar to those seen in U.S. doctrine, but produce very different results which will be identified in Part III.

Having developed a conceptual framework to address command and control issues, differences in the concept of command and the concept of control can now be examined.

### III. Conceptual Differences

Before developing the differences in the concepts of command and control, it is important first to again state why an understanding of these differences is important. Understanding the concepts of command and control may be the single most important base of knowledge for a commander. How the commander views his command functions, and how he sees his role in the control function, establishes the framework by which his unit will conduct military operations. If the commander does not clearly understand his role in the control function as compared to his command function, if he does not understand the limits he has on his span of control, and if he does not have a clear understanding of the systems which are supporting his command role and executing his control function, the commander and his unit will probably fail to accomplish its mission. At a minimum, they will accomplish it much less effectively, and probably at a higher cost, than if the concepts of command and control were clearly understood.

As developed earlier, command is the more all-inclusive concept to which the concept of control is subordinate. Through the functions of planning, organizing, coordinating, directing, and controlling the commander exercises his authority and responsibility of command. One should

understand that the manner in which the mission is to be controlled is, even if subconsciously, involved in each of the commander's functions. As he plans for the mission, he must plan for how the mission will be controlled. As he organizes for the mission, he must organize his envisioned control system. The commander must coordinate his control system with other commanders whose control systems may be involved with the mission. He must provide direction to the control system on how he desires the mission to be controlled. And finally, the commander must be prepared to control the control system. Assuming the control system has been properly envisioned and organized, the commander's supervision of his control system should not exceed his span of control. We'll come back to this issue of what the commander should control, and can control, on the modern battlefield.

Control of tactical forces is normally accomplished through one of two means, or a combination of the two -- positive control and procedural control. Positive control means that continuous, active participation in a unit's activities is being executed by the commander or his control system. Every event is monitored, and continual direction is provided by the controlling authority to the controlled unit. This method of control requires a continuous, uninterrupted means of communication between the controller and the controlled to work. Positive control is usually

associated with a system designed to maintain the control function at the highest, or centralized, level.

Procedural control means the commander's intent is conveyed to the controlled unit, direction is given, and an established set of control procedures (boundaries, limits of advance, SOPs, rules of engagement, etc.) are utilized by the controlled unit to remain within the framework and restraints set by the commander. Unlike positive control, procedural control requires a minimum of communication between the controller and controlled unit. Procedural control is normally associated with a system designed to pass the minute by minute control function, within established parameters, to the lowest, or decentralized, level where compliant subordinates meet the commander's intent.

At this point the reader may be saying "So what? Why do I need to understand the difference between positive control and procedural control?" The key to the answer is again concerned with how the commander sees his role in the function of control. Commanders who want to feel that they themselves are in immediate control of the minute by minute activities of their units will invariably opt for a positive control system centralized at the highest level. A commander who wants to allow his subordinates to exercise their initiative to the utmost will normally opt for a procedural control system within the framework of his intent which is decentralized to the lowest possible level.

Under either positive or procedural control, the concept of control by exception previously discussed can, and should, be applied. Control by exception in a positive control environment means that although the controller could be involved with every activity of his controlled unit, he would only involve himself with the most critical, or exceptional, activities, leaving lower level activities to the judgement of the controlled unit. An example of this might be a Ground Control Intercept (GCI) controller, who normally controls every part of the intercept, changing to only controlling the initial intercept heading and then only providing further calls as the pilot requests (exceptional information).

Control by exception applied to procedural control would tend to further reinforce the decentralized nature of this control means. The controlled unit would only be required to pass or coordinate exceptional information with the controller or commander. An example of this would be a unit only providing information when passing phase lines or upon seizing the objective instead of providing continuous situation reports which include no exceptional information. Whether applied to a positive control system, a procedural control system, or to a system having combined positive and procedural characteristics, the concept of control by exception is viable, dramatically assists the commander with his span of control, and also reduces the level of response required from the controlled unit.

As discussed earlier, the degree to which a commander can accomplish positive control over his subordinate units is referred to as his span of control. In antiquity, a commander could have personal positive control over his forces since there was a single geographic location at which a battle was fought at a specific time. Equally important, the commander's forces were usually of a homogeneous nature formed into a single, cohesive entity which he could control. As warfare evolved and the impact of technology was felt, the battlefield expanded, the duration of battles became longer, and the commander's forces became more diverse and more dispersed. The ability of a commander to directly have positive control over all of his forces continued to be reduced. The commander had to establish a staff and subordinate commanders through which he controlled his forces. Control systems evolved as the logical means for the commander to execute positive control over his forces by proxy. The commander supervised the control system, thus extending his potential for influencing the battle when his span of control exceeded what he personally could perform.

The concepts of command and control come into conflict when a commander attempts to execute positive control over his subordinate units beyond his span of control. Any commander would like to be able to control all of his unit's activities himself. Some commanders believe that they must personally be present to ensure operations at critical

junctures have the anticipated results. The flaw to this belief, and the conflict in the concepts of command and control, is that the commander is violating the very premise by which he initially planned for and established his control system. As the commander fulfilled his command functions, he planned his mission (and control for it), organized his force (and control system), coordinated with adjacent and higher commanders (and their control systems), directed his forces (and his control system) on his intent, and controlled his force's mission execution through the use of his control system. The control system will normally include, but is not limited to, his staff, his subordinate commanders and their staffs, and control agencies designed to control specific operating forces.

When the commander appears on the scene and assumes personal control, he is obviating the on-scene control system he himself established. Does he have the right to do so? Certainly. In a truly exceptional case could one expect him to do it? Definitely. The real conflict is with the tendency of some commanders to do it as a normal mode of operation, resulting in two effects. The on-scene controllers begin to believe the commander has no faith in them, and begin to doubt their own abilities. And the commander has narrowed his focus to that particular scene, and is unable to influence the rest of the force where he may well be needed. The other functions of command -- planning,

organizing, coordinating, and directing -- have taken a back seat to a single function -- control. The classic example of this conflict was seen in Viet Nam when the company commander on the ground (the controller) looked up to see his battalion commander's helicopter under his brigade commander's helicopter which was under the division commander's helicopter. This was command, and control, in conflict with a vengeance.

The concepts of synchronization and integration apply to both the concept of command and the concept of control, but are most apparent in their control implications. To refresh the reader, synchronization is defined as the arrangement of battlefield activities in time and space to bring the maximum relative combat power to bear at the decisive point. Integration is defined as the unification of various military activities or capabilities into a cohesive whole to bring maximum combat power to bear at the decisive point and time.

The concept of command is affected by the need either to synchronize or integrate as follows. In synchronized planning, various activities must each be planned for, as well as the actual synchronization must be planned for. Planning to integrate various activities into a cohesive whole means that the planning will focus on the means of integration, not on planning for each component part. Organizing a synchronized force means the force is organized in component capabilities

so that each can provide a discrete capability. Organizing an integrated force means organizing the various component capabilities into one cohesive whole which will perform its various functions in harmony as one. Coordinating a synchronized force means coordinating each separate activity with every other activity. Coordinating an integrated force means to coordinate a single entity -- the integrated force -- with other forces. Directing a synchronized force requires a commander to provide direction to each component activity of the synchronized force. Directing an integrated force allows the commander to provide direction only to the integrated force, which will ensure each component activity performs as the commander desires. The difference in philosophy between synchronization and integration -- the acceptance of component identity versus component identity only seen as part of a whole -- sets the character and attitude of the force. The truly dramatic impact of the force being either synchronized or integrated can be seen in the control function.

If the premise is true that synchronization is intended to bring component forces together for a common purpose while integration unifies components into a whole with a common purpose, then controlling a synchronized force will be very different from controlling an integrated force. In synchronized control, each component activity will normally have its own control system to ensure that the activity performs as desired, and a control system is needed to control the

separate synchronized activities. In integrated control, there is only one real control system, and that performs for the integrated force as a whole. In a synchronized force, there would be a maneuver control system separate from an artillery system which is separate from the aviation control system, and so on, all reporting to a central control system. In an integrated force, the central control system is designed to control each of the various activities belonging to the force.

The implications that synchronization and integration have to the control concept are directly reflected in the control systems design. A synchronized control system would by necessity be composed of a central synchronizing system and a subordinate discrete control system for each separate activity within the synchronized force. Each subordinate system would be required to "talk" to the central system, but would have no real need to "talk" to the other subordinate systems. An integrated control system could be a single system by which each component activity could "talk" to the central integrating controller as well as being able to "talk" to each other.

As stated, a control system designed to support the concept of synchronization will normally consist of separate control systems supporting each independent activity or capability of a unit. Aside from the possible logic of branch parochialism, it is hard to understand why separate

control systems are needed for artillery, maneuver, aviation, air defense, and the other capabilities in the Army today. In days of fiscal constraints, it would appear that there should be a more practical, and cost effective, way to provide an adequate control system to the Army.

A control system designed to support the concept of integration will look entirely different from that currently envisioned by the Army. A common central control system capable of supporting the requirements of each of the various capabilities of the force is required, and is feasible. The Soviet control system has many of the characteristics of an integrated control system. Radio-electronic combat control is a component imbedded in both their ground and air control systems. The Soviet artillery control system, and their air control system, are directly tied as integral parts of their ground maneuver control system at certain levels. In fact, the Soviet, performing as discussed earlier essentially the same functions as his U.S. counterparts, views his control system holistically, not as separate control systems but as a single system performing control over many activities. The control system used by the U.S. Marine Corps approaches this type of integrated system today, and is moving more along the line of an integrated system in the future.

The differences in the concepts of command and control, and the differences in the concepts of synchronization and integration, raise further questions

to be answered. At what point, and to what level, should a commander become directly involved in the control process? Is positive control, so dependent on continuous communication, still a viable concept in the projected electronic warfare environment of the future battlefield? Why doesn't doctrine address the concept of control by exception? Does the Army really want to synchronize its forces, or does the Army really want to integrate them, and is using the wrong term and concept? Answers to these questions, certainly not answered in this monograph, would be of tremendous help in more clearly expressing command and control concepts, and help eliminate some of the existing conflicts resident in the concepts.

#### IV. Conclusions

In conclusion, command and control should be viewed as not a single concept, but two interrelated concepts. Command as a concept consists of the functions of planning, organizing, coordinating, directing, and controlling military activities toward mission accomplishment. Control, one of the functions of command, is involved with supervising and directing activities of the force to accomplish the intent of the commander. Since control is part of command, the term "command and control" tends to be misunderstood and misleading, making a clear understanding of the concept of command and the concept of control much more difficult to grasp.

Control can be accomplished by either procedural or positive means. Procedural control, the use of a set of procedures to provide controls to accomplish the commander's intent, tends to be of a decentralized nature. Positive control, the active, continuous participation of the commander or his control system in the minute by minute activities of the unit, tends to be of a centralized nature. In the intense electronic warfare environment envisioned on the future battlefield, there is considerable doubt whether a centralized system of control requiring continuous communication capability (such as positive control) is still

viable. Some system of decentralized, non-communication intensive control (such as procedural control) will much more likely be the normal mode of control in the future. Whether the method of control is positive or procedural, the application of the concept of control by exception would streamline and simplify both the requirements on the control system and on the controlled unit.

The limits to the commander's span of control on the modern battlefield is central to development of command and control concepts. The span of control that a commander can, or should, execute is at the heart of the on-going debate over the concept of auftragstaktik. The Germans understood that, by issuing mission-type orders to their subordinate commanders with minimal procedural controls established, their units would continue to perform to accomplish the mission even as the fog and friction of the battlefield precluded the commander from knowing what each unit was doing. The German acceptance of the limits of the span of control of the commander on the modern battlefield has been taken to heart by many people in the military today. Those opposed to mission-type orders designed to decentralize control to the lowest level usually belong to the school of thought espousing positive centralized control. These opponents do not accept that the span of control of the commander on the modern battlefield is limited, and they oppose the concept of auftragstaktik. What is really at issue between the two

camps is their vision of the modern battlefield, and what exactly the span of control a commander can exercise really is.

The concepts of synchronization and integration are dynamically different. Synchronization and integration both are concepts which are seen as bringing concentrated combat power to bear on the enemy at the decisive point. The real difference between the two concepts may be best explained by a simple analogy. The objective is to strike your opponent a decisive blow to the face with your hand. Synchronization, accepting the independent nature of the five fingers and palm of your hand, arranges for your five fingers and palm to strike your opponent simultaneously. You slap your opponent. Integration, unifying your five fingers and palm into a cohesive whole, arranges for the single unified entity to strike your opponent. You strike your opponent with a clenched fist. Which has the greater effect on the enemy ? And which provides the type of force truly envisioned in the Army concept of synchronization? Integration appears to be the more decisive concept, but it does not allow for the kind of discrete branch identity which can be accepted within the concept of synchronization. The question here boils down to which is more important -- discrete independent identities of each branch component or a cohesive, integrated unified force?

The decision on whether to have a force organized and equipped as a synchronized or as an integrated force will

dramatically affect the type of control system required. As discussed earlier, a synchronized force, accepting the independent identity of each of the force's components, needs independent control capabilities for each force component as well as a central synchronizing control system. The current master plan in the Army for control systems includes a maneuver control system, an artillery control system, an aviation control system, a Forward Area Air Defense (FAAD) control system, a separate air defense control system, and on and on. It is a prime example of the control systems required to support a synchronized force. Would the control system for an integrated force be any different? Definitely. The control system would be designed from its inception to provide control for all for the force components as a unified entity. Separate control systems for each and every component of the force would not be provided. An example of this type of integrated control capability can be seen in the Marine Corps' Tactical Air Operations Center where the force's air and air defense components are controlled by a single common control system to ensure unity of effort.

The requirements the commander has for a system to support his command functions are not normally met by the systems which support his control function. Systems commonly called command and control systems are predominantly control, not command, systems. They very well support the commander's need to execute his control

function, but provide little if any support to the commander's other command functions of planning, organizing, coordinating, and directing his force. The commander needs a command system that both supports these functions, and that can interface with the control systems to allow the commander to participate in his control function. Current command and control system designs rarely, if ever, provide this type of capability to the commander.

An integrated control system can better support the needs of the command system than can a synchronized control system. The kinds of information needed by the command system include unit status updates, unit locations, enemy activities, availability of force resources, and forces committed/not committed. This type of information would support the command system in its planning, organizing, coordinating, and directing functions. This type of information is normally resident in the control system. A command system acquiring this information from a synchronized control system would need to access each independent control node of each of the independent force components. The task of accessing the information by the command system would be considerably simplified by accessing an integrated control system instead. Instead of accessing independent control nodes each of which contain separate information which the command system must coalesce, the command system could access a single control system where

this information would already reside in a coalesced form for use by the control system. This simplification and streamlining of information exchange between the command system and the control system is crucial to reducing the potential for error and delay that the fog and friction of war will invariably add to the best designed system.

The concept of integration should be closely examined as a more efficient and effective means of controlling tactical forces over the concept of synchronization. The objective of any military force is to defeat the enemy. The concept and method by which the maximum potential of the resources available to the commander can be realized to defeat the enemy is at the heart of the military profession. The existing Army tenet of synchronization should be reappraised. Is synchronization what is really desired, or is integration what is wanted? My conclusion is that the use of the terms almost interchangeably has poorly served the Army as it continues to evolve its doctrine, and as it works to provide improved command and control capabilities to its commanders.

Commanders, doctrine writers, and concept developers need to have a clearer understanding of the concepts of command and control. The distinctions between, and the inherent conflict resident in, the concepts of command -- and control -- must be expanded on in doctrine, understood by commanders, and accounted for by concept developers looking

at future requirements and capabilities. Control by exception should be further evaluated and adopted as a concept. Integration should be closely looked at as the concept to replace the concept of synchronization. Increased understanding of command and control concepts will provide a more efficient, effective, and formidable military force to meet the challenges of our adversaries.

## ENDNOTES

1. U.S. Department of Defense, Dictionary of Military and Associated Terms (Washington, DC: The Joint Chiefs of Staff, 1987), pp. 76.
2. Ibid, pp. 87-88.
3. Ibid, pp. 77.
4. U.S. Department of the Army, Field Manual 100-5, Operations (Washington, DC: The Department of the Army, 1986), pp. 17-18.
5. Simon and Schuster, Webster's New World Dictionary, Second Concise Edition (New York, NY: Simon and Schuster, 1982), pp. 390.
6. U.S. Department of the Army, Field Circular 101-55, Corps and Division command and Control (Ft. Leavenworth, KS: U.S. Army Command and General Staff College, 1985) pp. 3-1 -- 3-2.
7. Martin Van Creveld, Command in War, (Cambridge, MA: Harvard University Press, 1985) pp. 5.
8. Ibid, pp. 263.
9. Colonel Samuel H. Hays and Lieutenant Colonel William N. Thomas, Taking Command, (Harrisburg, PA: Stackpole Books, 1967) pp. 131.
10. Ibid, pp. 137.
11. Frank M. Snyder, "Command and Control and Decision Making", Principles of Command and Control, (Washington, DC: AFCEA International Press, 1987) pp. 17.
12. U.S. Marine Corps, Operational Handbook 8-1, Ground Combat Operations, (Quantico, VA: Marine Corps Combat Development Command, 1988) pp. 2-18.
13. Ibid, pp. 4-18.
14. D.A. Ivanov, Fundamentals of Tactical Command and Control -- A Soviet View, (Washington, DC: U.S. Government Printing Office, 1977) pp. 28-39.

## BIBLIOGRAPHY

### Books

Hays, Samuel H. and Thomas, William N., Taking Command. Harrisburg, PA: Stackpole Books, 1987.

Ivanov, D.A., Savel'yev, V.P., and Shemansky, P.V., Fundamentals of Tactical Command and Control. Washington, DC: U.S. Government Printing Office, 1977. (Translated from the Russian by the U.S. Air Force).

Simon and Schuster, Webster's New World Dictionary. Second Concise Edition. New York, NY: Simon and Schuster, Inc., 1982.

Snyder, Frank M., "Command and Control and Decision Making", Principles of Command and Control. Washington, DC: AFCEA International Press, 1987.

### Documents

Department of Defense, Joint Chiefs of Staff Publication 1, Dictionary of Military and Associated Terms. Washington, DC: U.S. Government Printing Office, 1987.

Field Circular 101-55, Corps and Division Command and Control. Ft. Leavenworth, KS: U.S. Army Command and General Staff College, February, 1985.

Field Manual 100-5, Operations. Washington, DC: HQ Department of the Army, 1986.

Operational Handbook 5-8, Control of Aircraft and Missiles. Quantico, VA: Marine Corps Combat Development Command, February, 1988.

Operational Handbook 6-1, Ground Combat Operations. Quantico, VA: Marine Corps Combat Development Command, January, 1988.

Cushman, John H., Organization and Operational Employment of Air/Land Forces. Carlisle Barracks, PA: U.S. Army War College, January, 1984.

**Noble, Joseph E.**, "Information Flow Analysis Of the Marine Air Command and Control System". Master of Military Arts and Science thesis, U.S. Army Command and General Staff College, 1988.

**Pennypacker, William S.**, "Automation: The Commander's Key to Victory in the AirLand Battle or Another Source of Friction". School of Advanced Military Studies monograph, U.S. Army Command and General Staff College, 1987.